



Appraising the Forensic Services in Crime Investigation: A Study on Police Officers from Gamo Zone in SNNPR, Ethiopia

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Abstract

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Criminal investigation is an art of uncovering the truth for the purpose of successful detection and prosecution. A successful and reliable investigation to stand for the justice requires a competent investigator and the use of technological aids from forensic and other scientific disciplines. This paper investigates the common perception among the police officers at different designation levels working in the Gamo region, SNNPR on the application of forensic services in crime investigation.

The major objectives of this study are to a) Identify the level of awareness on forensic service among the crime investigation officers and b) To identify the lacunae in implementation of forensic services in crime investigation process. The sample size of 70 police officers in all categories of Constable, Sub-Inspector, Inspector, Deputy Commissioner in the Gama zonal region were included as respondents of the study. A purposive sampling method was adopted and structured questionnaire was used for the data collection. Statistical interpolation of the results was done using SPSS software. This study identified the lack of awareness among the police officers working in lower hierarchy level (<50%) on various forensic services, specialized forensic divisions, and application of forensic approaches during crime investigation. A positive correlation was observed with respect to the designation of officers and the lack of awareness among the police officers. Majority (<65%) of the police officers were not aware of the existence of fingerprinting division in the country. There exists a poor communication between key actors in the criminal justice system and financial resources not directed at the front end of the forensic process. The outcomes of this study would facilitate the identification of the lacunae in implementation of forensic services in the crime investigation process. This study emphasizes the need for immediate attention on managing the forensic illiteracy among police officers, mainly on the field such as fingerprint analysis, criminal investigation methods and cybercrime. It is the need of hour to promote the establishment of forensic wing at Gamo zonal level law enforcement.

Key Words

Evidence
Forensic
Intervention
Investigation
Police officers

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1. Introduction

The wing of law enforcement and crime investigation agencies provide vital support to the criminal justice system to withstand the justice of a country [1]. Forensic services have become the indispensable part of the criminal investigation because they deliver timely and precise information at different stages of the criminal justice process. The ultimate objective of forensic science is to use the scientific and technological advancements to decipher the truth by means of prime interrogation and objective evidences that can help the criminal justice system to determine the guilt or innocence of an offender [2-4]. The forensic services are mostly used by the police officers to identify the suspects in the investigative phase of the criminal justice. The government attorneys and judges use them during the trial phase of the process. Assessing forensic services from the crime scene to the courtroom is complex and should include legal, structural and non-technical well as technical aspects. Therefore, it is quintessential that forensic services are provided by a highly qualified and impartial entity. Under the public sector, the agencies that provide forensic services are the governmental institutes coming under the auspice of ministry of justice, internal affairs and the ministry of health.

Certain forensic services can only be provided by the trained persons by using the police facilities to process crime scenes and perform primary forensic examinations (e.g., fingerprints) [5]. During crime investigation, the intervention of the crime scene investigators, who have received full-fledged forensic training, is needed and they have to quickly take over the work at the scene. However, in many situations, there is no prospect for the crime scene to be processed by crime scene investigators. In such case, the first responders (such as police officers) have to carry out some basic recovery procedures as well as the preservation and documentation activities. These situations typically occur if the crime scene is in a remote location, lack of skilled personnel, lack of awareness among the investigating officers and the criminal justice system response is not adequate [6]. Therefore, it is exceedingly important for police officers (first responders) to be thoroughly acquainted on various aspects of the crime scene investigation starting from the preservation of the scene and its evidence, documentation and subsequent transport of evidence to the forensic laboratory.

At all the aforementioned levels of crime investigation it is essential for the police officer to have careful planning, organization and coordination of the work [7].

The interview of criminals by police officers also requires an adequate knowledge on crime investigation as well as understanding the forensic results. A prospective study carried out by Lisa and Ray, 2014 on the use of forensic evidence in the context of police interviews revealed that majority of police officers were not aware of the forensic information while interviewing the subjects [8]. Despite of the availability of large proportion of forensic evidence during the interviews, the majority of police interviewers have received no training about how to interpret or use such forensic information. The study highlights the importance of forensic knowledge to the first responders and basic training has to be imparted to all police officers working on Crime prevention.

1.1 Statement of Problem

In Ethiopia, Federal Police Commission (FPC) has a forensic division directorate in national level conducts criminal investigation by various specialized units and its coordinate all regional police commissions around country to engage detection, investigation, power to seizure, confiscate evidence and prosecution of criminal cases which enforces laws [9,10]. According to Federal police report 2003, in Ethiopia reveals that country has only one forensic laboratory to deal all the basic finger print analysis, blood analysis, document examination and other scientific related examinations by various experts in forensic investigation. Due to the shortage of laboratories to deal the scientific investigation leads more delay of overburden of case analysis, reduce the competency and performance by the single laboratories. In the other hand the training on forensic investigation of basic skill of collection and preservation of evidence from crime scenes to the police officers is big gap in the police routine work [11].

Even though the 11 police training college across in Ethiopia, it's not much reach to all the police personals to deal the criminal investigations with forensic approach. The police-public ratio is lacking to deal the criminal investigation in scientific way in Ethiopia and even country have laboratories but most of time complex cases dealt by aboard laboratories [12]. The purpose of this paper is to identify the bottlenecks in the use of forensic services in the criminal justice system by adopting a survey approach which examines the awareness among the different levels of police officers belonging to Gamo zone of SNNPR region, Ethiopia. The level of awareness from the collection

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and use of forensic evidence from crime scene to court was analysed. This paper uses in-depth analysis of qualitative data from the 70 respondents (police officers) to identify key risk factors that limit the use of forensic science at the crime scene.

2. Methodology

The sample size of 70 police officers in all categories of Constable, Sub- Inspector, Inspector, Deputy Commissioner in the Gama zonal region were included as respondents of the study. A purposive sampling method was adopted and structured questionnaire was used for the data collection. The Questionnaire was Blind peer reviewed and necessary corrections were made before survey. All the survey questions were given in Amharic and English language. Statistical interpolation of the results was done using SPSS software. Correlation among the different variables used in the study was analyzed by Pearson correlation coefficient method using the SPSS software.

3. Results

3.1. Sample Profile

The sample profile data is represented in the Table1. Majority of the respondents of this study were Males (85.7%), educated up to school level (65.7%). Female respondents accounted for 14.3% of the sample. Among the study respondents, 57.1% was identified to be married and 42.9% unmarried. More number of people were found to be in the designation of police Constable (42.9%) whereas the other designations such as Assistant Inspector, Deputy Inspector, Commandant, Chief Inspector and Assistant Commissioner were found to be 22.9%, 14.3%, 14.3%, 4.3% and 1.4 % respectively. In terms of experience 31.4% of the police have 1 to 5 years of experience, 17.1% have 11 to 15 years of experience, 12.9% have 16 to 20 years of experience. Only 1.4% of the police officers were identified to have more than 30 years of work experience in the Gamo zone police jurisdiction.

3.2 Participation of Police Officers in Crime Investigation

In order to understand the participation of police personnel in the crime investigation, the primary respondent variables were divided into three groups (Yes, No and Don't Know) and their respective level of participation in different category of crimes (crime against person, crime against property, traffic accident and cybercrime were identified.

From the figure 1, it is evident that majority of the cases investigated by the police was the Hurt and Grievous category (60%). The other crimes such as murder, attempt to murder, rape and attempt to

rape have similar percentage (55.7%) of investigation experience by the police officers.



Figure 1. Participation of policers officers in various crime investigation

Table 1. Sample profile of the study respondents

Particulars	Number	Present
Sex		
Male	60	85.7
Female	10	14.3
Education		
School	46	65.7
Under Graduate	24	34.3
Post Graduate	.0	.0
Marital Status		
Unmarried	30	42.9
Married	40	57.1
Designation		
Constable	30	42.9
Assistant Inspector	16	22.9
Deputy Inspector	10	14.3
Chief Inspector	3	4.3
Assistant Commissioner	1	1.4
Commandant	10	14.3
Year Of Experience		
1 To 5	22	31.4
6 To 10	3	4.3
11 To 15	12	17.1
16 To 20	9	12.9
21 To 25	6	8.6
26 To 30	17	24.3
31 To 35	1	1.4

3.3 Investigation knowledge on cases related to Crime against property

The figure 2 give details about the crime investigation knowledge and the experience of the police officers in specific category of crime against property. It is evident that 58.6% of police persons had experience in the investigation of

theft related crime, 45.7% on robbery, 42.9% on dacoity and burglary and 44.3% on the cases related to the cheating.

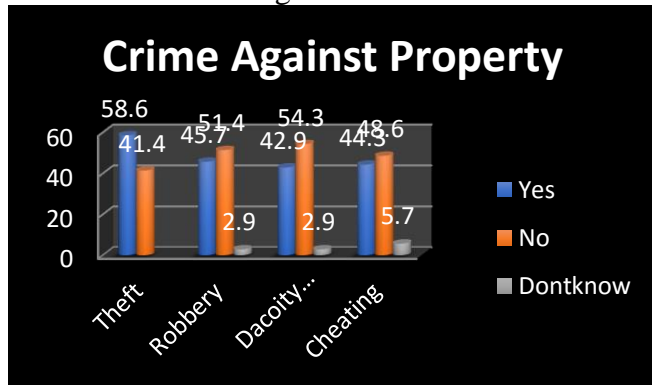


Figure 2 Investigation knowledge among officers on the cases related to crime against property.

3.4 Investigation Knowledge on Cases Related to Road Accidents and Cyber Crime

The graphs represented in the figure 3, reveals the investigation knowledge of the police personnel on the category of Road accidents and Cybercrime. Majority of the police (72%) have neither participation nor investigation involvement in cases related to the road accidents. Similarly, 84% of police person in the Gamo zone was not found to have any have experience related to the Cybercrime.

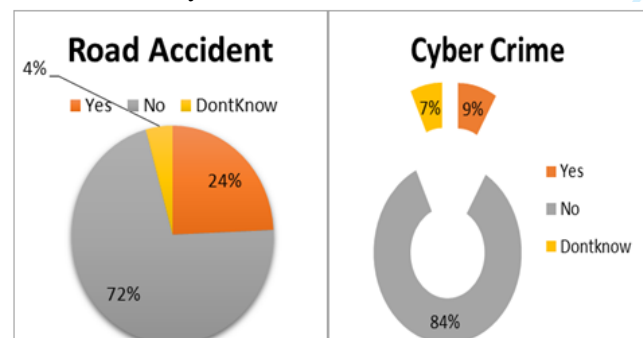


Figure 3. Police knowledge on the criminal cases related to Traffic accidents and Cyber crime

3.5 Role of Police Officers in Crime Investigation

The role of police officers in the crime investigation was assessed based on their involvement at various categories of crime investigation such as handling crime suspects and witness investigation, interrogation of the suspects and victims of crime, receiving complaints from victims and tactical approach or conceptual analysis of crime incidents respectively.

From the figure 4, it is evident that 58.6% of police personnel were found to have equal participation in interrogation and handling complaints from crime victims as well as interrogating the suspects. Around 55.7% of the police officers were handling suspects and witness of crime and had conceptual

understanding on the various approaches in crime investigation.

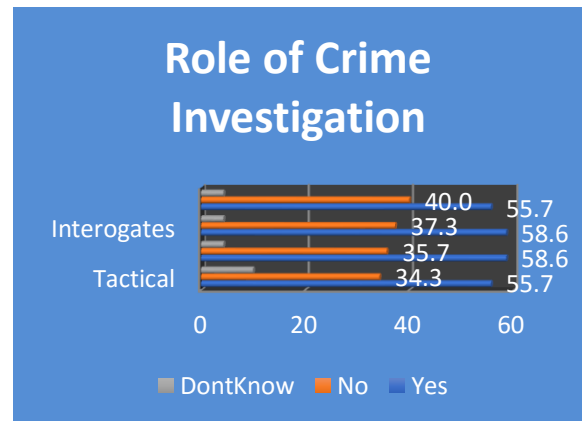


Figure 4. Role of police officers in crime investigation

3.6 Technical knowledge on forensic interventions in crime investigation

The survey results pertaining to the technical forensic knowledge among police officers on various approaches in crime scene handling such as evidence collection, preservation, examination of evidence, documentation and sketching the crime scene is represented in the figure 5. Majority (60%) of study respondents had no experience in examination of evidence and 57.1% have no knowledge about preserving the evidence in the crime scene. The technical knowledge in documenting the crime scene, videotaping and sketching the crime scene was found to be 65.7%, 64.3% and 57.1% respectively. Among the study respondents, 4.3% of police officers have no knowledge on any of the forensic techniques related to crime scene investigation.

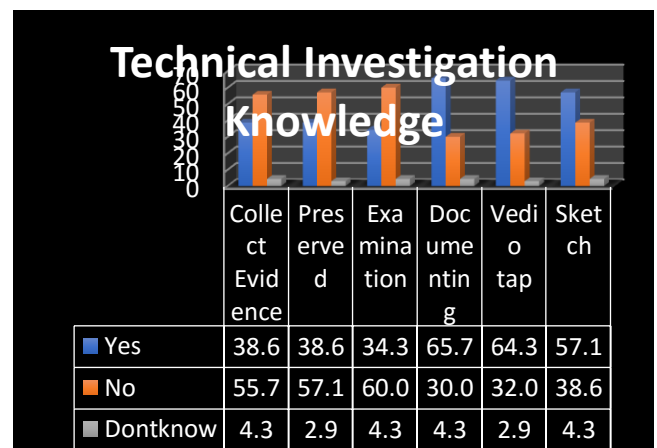


Figure 5. Technical knowledge of police officers related to forensic crime investigation techniques

The table 2 highlights the knowledge differences among the police officers working in the Gamo zone on various technical divisions of forensic department.

Majority of the police officers 65.7% don't have any knowledge or experience related to blood pattern analysis, ballistics, questioned documents and serology. An alarming fact in this survey was that 64.3 % of the police officers were not aware of the existence of finger print division in the country.

Table 2. Knowledge of police officers on different disciplines of forensic science

Knowledge of Division in Forensic Investigation	Yes	No	Don't know	Total %
Impression/Finger print Wing	7.1	28.6	64.3	100
Blood pattern Analysis	11.4	22.9	65.7	100
Ballistics /Firearms/Tool marks	11.4	22.9	65.7	100
Questioned Documents	12.9	21.4	65.7	100
Medico-legal death Investigation	8.2	35.9	55.9	100
Biology and Serology	5.7	28.6	65.7	100
Fire/Arson Analysis	7.1	35.7	57.2	100
Toxicology	4.3	40	55.7	100
Cybercrime Forensics	5.8	37.1	57.1	100

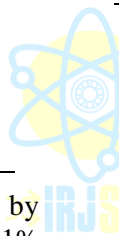
The table 3 shows the various barriers experienced by the police officers during crime investigation. 47.1% of police personnel were not allowed to apply forensic investigation methods and only 24.3% were allowed to apply in their crime investigation process. The prominent finding observed was that 45.7% of police officers were not given permission to conduct forensic investigation. 34.3% of the respondents encountered the lack of access to forensic services during their investigation. Another important finding was that around 42.9% of police officers reported on the insufficient availability of forensic infrastructure in the Gamo region.

3.7 Correlation Analysis

The inter-correlation matrix generated based on the Karl Pearson's correlation values, between all the continuous variables selected for the study are represented in the Figure 6. From the Correlation Matrix it can be seen that there is a strong positive correlation between Designation and Forensic application in Investigation ($r=0.187$; $p \leq 0.1$ level). This indicates that the hierarchal organization in the police system has a strong influence on the application of forensic services

Table 3. Professional challenges faced by the police officers during crime investigation

Barriers to Apply forensic Knowledge /application crime Investigation	Yes	No	Don't Know	Total %
Allowed to apply Forensic investigation	24.3	47.1	28.6	100
Superior officer allowed/Give permission	28.6	45.7	25.7	100.0
Do you suffer any forensic lack in your investigation?	34.3	42.8	22.9	100.0
Do you have accessible coordination to the forensic laborites?	25.7	48.6	25.7	100.0
Do you feel any case acquittal for insufficient of forensic availability in your case?	30.0	42.9	27.1	100.0



		Forensic Application in Investigation	Knowledge of Forensic Divisions	Challenges and Importance apply Forensic Investigation	Designation	Year of experience
Forensic Application in Investigation	Pearson Correlation	1	.264*	.226	-.187	-.160
	Sig. (2-tailed)		.027	.060	.120	.185
	N	70	70	70	70	70
Knowledge of Forensic Divisions	Pearson Correlation	.264*	1	.368**	-.281*	-.171
	Sig. (2-tailed)	.027		.002	.019	.158
	N	70	70	70	70	70
Challenges and Importance apply Forensic Investigation	Pearson Correlation	.226	.368**	1	-.162	-.221
	Sig. (2-tailed)	.060	.002		.181	.065
	N	70	70	70	70	70
Designation	Pearson Correlation	-.187	-.281*	-.162	1	.550**
	Sig. (2-tailed)	.120	.019	.181		.000
	N	70	70	70	70	70
Year of experience	Pearson Correlation	-.160	-.171	-.221	.550**	1
	Sig. (2-tailed)	.185	.158	.065	.000	
	N	70	70	70	70	70

*. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

Figure 6. Correlation matrix of the variables used in this study

3.7.1 Knowledge of Forensic Divisions

From the correlation Matrix a strong positive correlation exist between the designation and knowledge of various forensic divisions ($r=0.281$; $p \leq 0.1$ level) is observed. This indicates that the need for forensic intervention in criminal investigations was mainly limited to the designation of the police officers.

3.7.2 Challenges and Importance of forensic interventions

It can be seen from the correlation matrix, there is a strong positive correlation ($r=.162$; $p\leq.01$) among the designation of police officers and their challenges faced while using forensic services. Moreover, without forensic investigation, many cases are not proven scientifically and lead to acquittal. This correlation matrix highlights that the knowledge of forensic investigation is a must for all police officers in the criminal investigation process.

4. Conclusion

A survey of police officers working in the Gamo zone was done to determine the views and needs of the forensic science. Majority of the study respondents (<50%) were not aware of the use of forensic services in their criminal investigation practice. It was obvious that the investigative capabilities of forensic science are being realized by officers working in higher hierarchy level of police department such as commissioners and inspectors, whereas the first responders like constables and Sub-inspectors have limited forensic literacy. There exists a poor communication between key actors in the criminal justice system and financial resources not directed at the front end of the forensic process. The need for additional training for law enforcement on the use of forensic science to develop investigative leads is critical. This study emphasizes the need for immediate attention on managing the forensic illiteracy among police officers, mainly on fingerprint analysis, criminal investigation methods and cybercrime.

5. Acknowledgement

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